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VZ 200/300

HUNTER VALLEY VZ JOURNAL

A VERY MERRY
CHRISTMAS
AND PROSPEROUS
AND HAPPY
NEW YEAR 1991

PRODUCED BI-MONTHLY BY H.V.VZ.U.G.
A NON PROFIT ORGANIZATION

** EDITOR'S COMMENTS **

HELP - SELL & TELL — PAGE 3

CORRECTION 1 - LOAD UP: — PAGE 4

'LOAD UP' IN ISSUE 28/13 BY BOB KITCH WAS INADVERTANTLY CORRUPTED BY ME WHILE TRYING TO FIT PROGRAM ON SINGLE PAGE. A SOLUTION IS PRESENTED AND MY APOLOGIES TO ALL.

ENLARGED MEMORY PEEK ROUTINE: — PAGE 4

A USEFULL LITTLE ROUTINE FOR PEEKING AROUND MEMORY, BASIC OR DOS ROMS, ETC. SOME MEMORY ADDRESSES ARE GIVEN FOR YOUR PERUSAL.

FLICKER-FREE GRAPHICS PART II BY BOB KITCH — PAGES 5-6

BOB CONTINUES ON FROM LAST ISSUE FINISHING HIS EXPLANATION OF VZ GRAPHICS AND LIFTING THE VEIL OF MYSTERY FOR MANY OF US.

INVESTIGATING VZ SOUND BY BOB KITCH — PAGES 7-8

AS BOB MENTIONS IN HIS ARTICLE NOT MANY PROGRAMMERS USE SOUND EFFECTIVELY ON THE VZ. BOB PROVIDES A SIMPLE DEMO PROGRAM CALLED 'STARWARS' WITH MORE COMPLEX SOUNDS TO FOLLOW.

CORRECTION 2 - TANDY PR/PATCH: — PAGES 9-10

ANOTHER OF BRIAN GREEVE'S PROGRAMS I MANAGED TO CORRUPT IN ISSUE 28/6-7. AGAIN IT WAS THE MACHINE CODE WHICH HAD WRONG ADDRESSES. THE CORRECTED VERSION IS REPRODUCED. MY APOLOGIES AGAIN TO ALL.

ASSEMBLER ROUTINES PART II BY BEN HOBSON — PAGES 11-13

BEN CONTINUES WITH LARGER ROUTINES FOR YOU TO TRY OUT YOUR SKILLS AT ASSEMBLY PROGRAMMING.

MODS TO DSE DISC DATABASE BY JOHN D'ALTON — PAGES 14-16

THOSE WHO WISH TO MODIFY THEIR DSE DISK BASED DATABASE NEED LOOK NO FURTHER AS JOHN PROVIDES THEM INFO ON HOW TO ACCOMPLISH IT.

PROPOSED MEMORY EXPANSION STANDARDS BY JOE LEON — PAGE 17

I'M PLANNING MASSIVE MEMORY EXPANSION FOR THE VZ. I'VE EXPANDED THE VZ MEMORY MAP TO SHOW YOU WHAT I PROPOSE AND WHAT I/O PORTS I INTEND TO USE. FOR THOSE INTERESTED PLEASE CONTACT ME AS SOON AS YOU CAN.

VZ MODEM SOFTWARE AND FAST M/C DISASSEMLER SOFTWARE — PAGE 18

SOFTWARE FOR SALE - PATCH3.3 EXTENDED DOS & MENU-FILE COPIER — PAGE 19

USER GROUPS ** NEWS ** SUBS — PAGE 20

BELIEVE IT OR NOT:

THERE WAS THIS PERSON WHO SHALL REMAIN NAMELESS WAS REQUESTED BY THE PROGRAM HE WAS USING TO 'PRESS ANY KEY TO PROCEED' WHICH HE COULDN'T FIND, SO HE TOOK HIS COMPUTER BACK TO THE SHOP FOR ONE WITH AN 'ANY' KEY.

CONGRATULATIONS: ON THE PRODUCTION OF THE FOURTH ANNIVERSARY EDITION. I PERSONALLY ACKNOWLEDGE THIS IS DUE MOSTLY TO YOUR EFFORTS. BRIAN GREEVE.

THANKS BRIAN FOR YOUR WORDS OF PRAISE WHICH IS GREATLY APPRECIATED, BUT ANY PUPLICATION IS ONLY AS GOOD AS ITS COTRIBUTORS. I WAS LUCKY IN HAVING THE SUPPORT OF HIGH CALIBRE CONTRIBUTORS LIKE YOURSELF AND MANY OTHERS AS WELL. JOE LEON , EDITOR.

FOURTH ANNIVERSARY: WHEN I FIRST STEPPED IN DECEMBER 1986 I NEVER ENVISAGED THAT I'LD BE STILL EDITING FOUR YEARS LATER. FROM THE FIRST TO THE CURRENT ISSUE I'VE TRIED TO PRODUCE THE JOURNAL TO THE BEST OF MY ABILITIES AND I FIND THAT EVEN AFTER ALL THIS TIME AS EDITOR I STILL ENJOY DOING IT.

IN THE LAST 12 MONTHS I NEARLY GAVE IT ALL UP SEVERAL TIMES FOR PERSONAL REASONS, BUT THINGS ARE STARTING TO LOOK UP AND WOULD YOU BELIEVE TWO ISSUES IN TWO MONTHS. LOOKS LIKE I'LL BE ABLE TO CATCH UP SOON. LIKE ANYONE ELSE I MAKE MISTAKES AND THERE HAVE BEEN A FEW LATELY AND I FIND I'M LEARNING BECAUSE OF THEM.

THE JOURNAL HAS GIVEN ME A GREAT DEAL OF PERSONAL SATISFACTION, SELF ESTEEM AND A SENSE OF ACCOMPLISMENT, BUT MOST IMPORTANT OF ALL ONE WAY OR ANOTHER I'VE MADE CONTACT WITH MANY PERSONS VIA THE POST, PHONE OR PERSONALLY AND SHARED A COMMON INTEREST, THE MIGHTY VZ.

HELP WITH ARTICLES: I'M RUNNING SHORT OF ARTICLES AGAIN FOR THE JOURNAL SO IF YOU CAN HELP OUT HOWEVER SMALL YOUR CONTRIBUTION IT WOULD BE APPRECIATED. REMEMBER THIS IS YOUR JOURNAL AND AS THE SAYING GOES MANY HANDS MAKE LIGHT WORK AND IT WOULD MAKE MY JOB LOTS EASIER. SO SHARPEN YOUR FINGERS AND START TYPING AWAY.

OPEN INVITATION: OUR CLUB DOORS ARE OPEN TO ALL VISITORS REGARDLESS OF GEOGRAPHY. SO IF YOU ARE PASSING THROUGH OR HOLIDAYING NEARBY, THEN GIVE US A CALL EVEN IF IT'S NOT CLUB MEETING TIME. WE'LL BE GLAD TO SEE YOU.

WANTED: A CHEAP BUT OK 64K RAM PACK.
PHOTOCOPIES OF: AEM ARTICLES ON VZ, EG: APRIL 88. EA JULY 81, GP-100 REVIEW AND VZ. ETI MARCH 84 STEVE OLNEY ON THE VZ. ETI-687 VZ200 34K SUPER DUPER VZ. ETI OCT 84 RITTY. JULY 85 AND ANY OTHER ARTICLES UP TO JUNE 88 (ON VZ).

DAVID MAUNDER 'LYNDONDALE' BORAH CREEK ROAD QUIRINDI 2343
PHONE: (067) 461 711 AFTER 4 PM.

WANTED TO SWAP: VZ 300 PCB (NO CASE OR KEYBOARD), JOYSTICK INTERFACE WITH ONE JOYSTICK; 9 X 6116 2K RAM CHIPS, Z80A, 2716 EPROM, 2 X 482764 EPROMS, PLUS VARIOUS IC'S LIKE 74LS138, 74LS157. ALL CHIPS ARE FROM A DEFUNCT MICROBEE AND ARE SOLDERED EXEPT FOR THE Z80A AND THE EPROMS. THE VZ 300 ONLY NEEDS A U14 IC (GA004).

SWAP FOR: VZ 200 IN WORKING CODITION WITH OR WITHOUT KEYBOARD. IF THIS DEAL DOES NOT PLEASE THEN CONTACT ME ANYWAY AS I HAVE OTHER GOODIES THAT I WILL THROW IN TO COMPLETE THE DEAL.

BEN HOBSON PO BOX 255 QUIRINDI 2343 - PHONE: (067) 462 076)

CORRECTIONS TO LOAD UP

THE PROGRAM WILL NOT LOAD ANY HI-RES SCREENS INTO MEMORY AND MORE LIKELY WILL HANG UP. WHEN EDITING I SHORTENED THE START OF THE PROGRAM SO IT WOULD FIT ON ONE PAGE. EVEN THOUGH THE WARNING WAS IN LINE 1020 SOMEHOW I MISSED IT. MY APOLOGIES TO BOB AND OUR READERS. TO MAKE UP FOR IT I PRESENT A SOLUTION SO YOU CAN FIX IT UP.

LOAD LOAD UP AND TYPE IN THE LITTLE PROGRAM BELOW AND THEN SAVE THE ALTERED PROGRAM. NEXT TYPE IN GOTO 4000 AND PRESS RETURN. WHAT WE'LL BE TRYING TO DO IS TO FIND OUT THE POKE ADDRESSES FOR THE LETTER A AND H IN THE CHARACTERS 'ABCDEFGH' IN LINE 1000. YOU'LL SEE THREE COLUMNS ON THE SCREEN.

FIRST COLUMN = MEMORY ADDRESS OF THE CHARACTER.
SECOND COLUMN = ASCII CODE OF THE CHARACTER.
THIRD COLUMN = CHARACTER.

USING THE SPACE KEY TO START/STOP CONTINUE TILL THE LETTERS ABCDEFGH ARE DISPLAYED ON THE SCREEN IN THE THIRD COLUMN. WRITE DOWN THE ADDRESSES FOR THE LETTERS 'A' AND 'H' AND PRESS 'Q' TO QUIT. NEXT LIST LINE 1000. ENTER THE TWO NEW ADDRESSES OVER THE OLD ONES AND THEN LIST LINE 2100. TYPE IN THE NEW ADDRESS FOR 'A' OVER THE OLD ONE AND THAT COMPLETES THE CORRECTIONS. THE PROGRAM SHOULD WORK AS DESIGNED NOW. ANY TIME YOU ALTER LINES 10 TO 1000 YOU HAVE TO CHANGE THE ADDRESS FOR 'A' IN LINE 2100 USING THE MEMORY PEEK ROUTINE TO FIND THE NEW ADDRESS FOR 'A' FIRST.

```
3090 '
4000 CLS:POKE30777,1:PRINT@3,"SPACE START/STOP   Q-QUIT"
4010 PRINT:FORL=31800 TO 31900
4015 PRINT TAB(9) USING"###### ";L;
4020 PRINT USING" ###  ";PEEK(L);
4030 IF PEEK(L)<32 THEN PRINT:GOTO 4050
4040 PRINT USING"%%";CHR$(PEEK(L))
4050 IF INKEY$=" "THEN 4060 ELSE IF INKEY$="Q"THEN 4070
4060 IF INKEY$=""THEN 4050 ELSE NEXT
4070 CLS:END
```

ENLARGED MEMORY PEEK ROUTINE:

```
100 CLS:POKE30777,1:PRINT"[illegible]";
110 PRINT@98,"";:INPUT"ENTER START ADDRESS ";SA
120 PRINT@162,"";:INPUT"ENTER  END  ADDRESS ";EA
130 IF EA<=SA THEN 120
140 IF SA>32767 THEN SA=SA-65536
150 IF EA>32767 THEN EA=EA-65536
160 :
170 CLS:POKE30777,1:PRINT"[illegible]";
180 PRINT:FORL= SA TO EA:PRINTTAB(9)USING"######  ";L;
190 PRINT USING"###  ";PEEK(L);
200 IF PEEK(L)<32 THEN PRINT:GOTO 220
210 PRINT USING"%%";CHR$(PEEK(L))
220 IF INKEY$=" "THEN 230 ELSE IF INKEY$="Q"THEN 240
230 IF INKEY$=""THEN 220 ELSE NEXT
240 PRINT@481,"[illegible]";
250 POKE 30777,35:SOUND30,1
260 IF INKEY$=CHR$(13)THEN 100 ELSE 260
270 :
280 'SOME INTERESTING PEEK ADDRESSES
290 'ADDRESSES  270 TO 300  &  5710 TO 6180
300 'ADDRESSES 6420 TO 6460 & 17190 TO 17270
```

FLICKER-FREE GRAPHICS PART II
BY BOB KITCH

WE NOW NEED TO CONSIDER THE TIMING OF THE CPU IN DOING A 2K BLOCK MOVE OPERATION. THE Z80 IN THE VZ300 RUNS AT 3.54 MHZ (THE VZ200 RUNS AT 3.58 MHZ). THE FOLLOWING TABULATION INDICATES THE TIMING OF THE BLOCK MOVE -

OPCODE	T-STATES	M-CYCLES
DI	4	1
LD HL	10	3
LD DE	10	3
LD BC	10	3
LDIR	21X2047+16	5X2047+4
	IF BC=0 THEN T=16 AND M=4	
	IF BC<>0 THEN T=21 AND M=5	
EI	4	1
RET	10	3
	43051	10253

TIME TO EXECUTE IS 43051/3.54E6 SEC. = 12.16 MSEC. TO BLOCK MOVE A 2K SCREEN. THIS IS LONGER THAN THE 7.69 MSEC. MENTIONED ABOVE. A 2K BLOCK MOVE WILL CAUSE HASH TO APPEAR ON THE SCREEN BECAUSE A TIMING CONFLICT IN THE WRITE BY THE Z80 AND THE READ BY THE VDG OCCURS. FOR THOSE OF YOU WHO HAVE SEEN THROWUP OPERATE, YOU WILL HAVE SEEN THIS EFFECT IN THE "PLAIN MODE" OF OPERATION.

SO, WHAT HAVE WE LEARNT THUS FAR ABOUT GRAPHICS ON THE VZ? WE HAVE DISCOVERED HOW THE Z80 AND THE 6847 VDG INTERACT WITH VRAM TO MAKE THE SCREEN DISPLAY. WE HAVE ALSO SEEN WHY "HASH" APPEARS ON THE SCREEN. WE HAVE ALSO ANALYSED THE TIMING OF SCREEN TRANSFERS FROM A BUFFER AND DISCOVERED THAT ABOUT 1K OF DATA CAN BE BLOCK MOVED DURING THE SCREEN REFRESH PERIOD. IN SOME PREVIOUS ARTICLES IN USER GROUP NEWSLETTERS, I HAVE DESCRIBED THE MASKABLE INTERRUPT SYSTEM USED IN THE VZ. LET'S PUT ALL OF THIS TOGETHER TO MAKE A HASH-FREE DISPLAY SYSTEM. SUCH A SYSTEM IS USED IN LIVENUP.

INTERRUPT-DRIVEN SCREEN BUFFER.

I TRUST THAT THE FOREGOING DISCUSSION MAKES IT APPARENT THAT, WHEN WRITING PARTICULARLY GRAPHICS PROGRAMS, IT IS BETTER TO HAVE THE Z80 UPDATING A BUFFER AREA IN MEMORY RATHER THAN DIRECTLY WRITING TO VRAM. THIS IS THE ONLY TECHNIQUE THAT WILL REMOVE THE HASH FROM THE VZ DISPLAY. THIS PROGRAMMING TECHNIQUE HAS THE ADDED ADVANTAGE THAT INTERRUPTS CAN BE DISABLED AND PROCESSING SPED UP CONSIDERABLY BY BYPASSING SOME OF THE VZ'S OVERHEADS SUCH AS KEYBOARD SCANNING.

TO TRANSFER THE BUFFER INTO VRAM EMPLOYS A FEW OTHER PROGRAMMING TRICKS. CLEARLY A 2K HI-RES SCREEN MUST BE MOVED IN TWO HALVES AS THERE IS SIMPLY INSUFFICIENT TIME DURING THE "INVISIBLE" PORTION OF THE DISPLAY UPDATE TO MOVE IT IN A SINGLE 2K BLOCK.

THE METHOD THAT I HAVE USED ENABLES THE MASKABLE INTERRUPTS ON THE Z80 AND RESETS THE INTERRUPT VECTOR TO POINT TO THE SCREEN UPDATE ROUTINES. TO ALLOW SUFFICIENT TIME FOR THE TWO HALVES OF THE BUFFER TO BE RELOCATED, A SUITABLE DELAY OR PAUSE ROUTINE MUST BE ENTERED. ONE SUCH ROUTINE OCCURS IN THE DOS ROM AND CAN BE CONVENIENTLY CALLED WITH THE DELAY DURATION IN MSEC. PASSED IN THE BC REGISTER. IF DOS IS NOT INSTALLED ON THE VZ THEN ANOTHER DELAY ROUTINE OCCURS AT 0060H IN ROM. THE VALUE PASSED IN BC IS NOT IN MSEC. HOWEVER. THE DELAY DURATION VALUE CAN ALSO BE USED TO CONTROL THE SPEED AND SMOOTHNESS AT WHICH GRAPHICS FLOW ACROSS THE SCREEN.

THE SOLUTION - AN ASSEMBLER LISTING.

SO WHAT DOES THE ASSEMBLER LISTING OF ALL OF THIS LOOK LIKE? BY REFERRING TO A LISTING OF MOVE USED BY LIVENUP, SOME CLARITY MAY BE SHED ON THE SUBJECT FOR CONFUSED READERS!

THE LISTING FALLS NATURALLY INTO FOUR SECTIONS. THE FIRST IS THE MAINLINE CALLING SEQUENCE AND IS NOT DETAILED HEREIN AS THIS WILL VARY ACCORDING TO THE APPLICATION. THE SECOND PORTION IS A PAUSE AND DISPLAY SUBROUTINE CALLED DPLY WHICH POINTS THE INTERRUPT VECTOR AT THE MOVE ROUTINES, ENABLES INTERRUPTS AND THEN ENTERS A PAUSE ROUTINE DURING WHICH TIME THE TRANSFER OF THE BUFFER INTO VRAM OCCURS. THE THIRD AND FOURTH PORTIONS MOVE THE TOP AND BOTTOM HALVES OF THE BUFFER RESPECTIVELY. THEY ARE CALLED FROM THE INTERRUPT VECTOR LOCATED AT 787DH DURING THE PAUSE CYCLE AND WHEN INTERRUPTS ARE ENABLED. THEY ARE ACCURATELY TIMED AND INITIATED BY THE *FS SIGNAL WHICH CALLS THE INTERRUPT HANDLING ROUTINE. THE MOVE OCCURS DURING THE "INVISIBLE" PORTION OF THE DISPLAY UPDATE AND ELIMINATES HASH.

```
        MAINLINE OF PROGRAM  ;CALLING SEQUENCE.
        ..........
        DI                   ;DISABLE INTERRUPTS TO SPEED UP PROCESSING.
        DO CALCULATIONS ETC. ;UPDATE VRAM.
        CALL DPLY            ;UPDATE SCREEN DISPLAY.
        EI                   ;ENABLE INTERRUPTS TO RESUME OTHER CHOIRS.
        ..........
        END

   VRAM EQU 7000H            ;START OF SCREEN MEMORY.
   SSCN EQU 0B200H           ;START OF BUFFER. (OR WHERE-EVER)
   SZSC EQU 0800H            ;SIZE OF SCREEN/BUFFER.
   HSZC EQU 0400H            ;HALF OF SIZE OF SCREEN/BUFFER.
   DLAY EQU 4038H            ;ADDRESS OF DELAY ROUTINE IN DOS.
   IVEC EQU 787DH            ;LOCATION OF 3-BYTE INTERRUPT VECTOR.
   JMP  EQU 0C3H             ;OPCODE FOR JUMP.
   TURN EQU 0C9H             ;OPCODE FOR RETURN.
   DURD EQU 22H              ;DELAY DURATION IN MSEC. TO PERMIT SCREEN UPDATE.

   DPLY LD A, JMP            ;PUT OPCODE FOR JUMP INTO A.
        LD BC, MTOP          ;POINT TO START OF MOVE TOP-HALF OF BUFFER ROUTINE.
        LD (IVEC+1), BC      ;RESET INTERRUPT VECTOR.
        LD (IVEC), A         ;DITTO - NOW POINTS TO MTOP.
        EI                   ;ENABLE INTERRUPTS SO THAT INTERRUPT VECTOR IS SCANNED.
        LD BC, DURD          ;DELAY DURATION IN MSEC.
        CALL DLAY            ;GO OFF INTO DELAY ROUTINE ALLOWING SUFFICIENT TIME FOR
SCREEN TO BE UPDATED FROM BUFFER.
        DI                   ;DISABLE INTERRUPTS TO PREPARE FOR RESUMING MAINLINE
PROGRAM.
        RET                  ;GO BACK TO CALLING MAINLINE TO UPDATE BUFFER.

   MTOP LD HL, SSCN          ;SET SOURCE TO START OF BUFFER.
        LD DE, VRAM          ;SET DESTINATION TO START OF SCREEN.
        LD BC, HSZC          ;SET SIZE TO HALF OF BUFFER/SCREEN SIZE.
        LDIR                 ;UPDATE TOP-HALF OF SCREEN.
        DI                   ;DISABLE INTERRUPTS AS INTERRUPT VECTOR IS TO BE RESET.
        LD BC, MBOT          ;POINT TO START OF MOVE BOTTOM-HALF OF BUFFER ROUTINE.
        LD (IVEC+1), BC      ;RESET INTERRUPT VECTOR.
        EI                   ;ENABLE INTERRUPTS SO THAT DELAY ROUTINE CAN CONTINUE.
        RET                  ;GO BACK TO INTERRUPT HANDLER.

   MBOT LD HL, SSCN+HSZC     ;SET SOURCE TO HALF-WAY THROUGH BUFFER.
        LD DE, VRAM+HSZC     ;SET DESTINATION SIMILARLY.
        LD BC, HSZC          ;SET SIZE.
        LDIR                 ;UPDATE BOTTOM-HALF OF SCREEN.
        DI                   ;DISABLE INTERRUPTS AS INTERRUPT VECTOR IS TO BE RESET.
        LD A, TURN           ;PUT OPCODE FOR A RETURN INTO A.
        LD (IVEC), A         ;RESET INTERRUPT VECTOR SO THAT SCREEN UPDATING
ROUTINES ARE NOT ENTERED DURING REMAINDER OF DELAY ROUTINE.
        EI                   ;ENABLE INTERRUPTS SO THAT DELAY ROUTINE CAN CONTINUE.
        RET                  ;GO BACK TO INTERRUPT HANDLER.
```

LET'S INVESTIGATE SOUND ON THE VZ
PART I - BY BOB KITCH

SOUND OR MUSIC HAS NOT BEEN FEATURED IN MOST VZ SOFTWARE. DURING A NUMBER OF BRIEF ARTICLES, I WILL DISCUSS THE GENERATION OF SOUNDS ON THE VZ. I WILL ALSO PROVIDE SOME THOUGHT PROVOKING PROGRAM LISTINGS. I THOROUGHLY ENJOY COMPUTER GENERATED OR SYNTHESIZED MUSIC. THE VZ CAN ALSO BE USED AS A CONTROLLER IN MUSIC GENERATION.

BACKGROUND

THE VZ TONE GENERATOR USES A SMALL PIEZO SPEAKER CONNECTED ACROSS TWO BITS OF THE I/O LATCH. CLEARLY THERE IS NOT MUCH HARDWARE INVOLVED - WHICH IS WHY ALL THE SOUND GENERATION DEPENDS UPON SOFTWARE.

THE OBVIOUS SHORTCOMINGS OF THIS METHOD ARE TWOFOLD:

FIRSTY, ONLY SINGLE VOICED MELODIES CAN BE PLAYED AND, SECONDLY, NOTHING ELSE CAN BE DONE WHILST PLAYING AS THE Z80 IS FULLY OCCUPIED. TO IMPROVE UPON THIS SITUATION, SOME ADDITIONAL HARDWARE IS REQUIRED, SUCH AS AN ADDITIONAL SOUND GENERATING CHIP.

TONE GENERATION IS A PERIODIC PHENOMENON AND REQUIRES FREQUENT SETTING AND RESETTING OF THE TWO BITS DRIVING THE SPEAKER. THE VZ'S I/O LATCH IS ADDRESSED AT 6800H. BITS 0 AND 5 DRIVE THE SPEAKER IN A PUSH-PULL MODE. THIS MEANS THAT BITS 5 AND 0 MUST BE COMPLIMENTARY TO DRIVE THE SPEAKER. THE SAME LATCH ALSO CONTROLS THE CASSETTE PORT ON THE VZ AND THIS MAY BE USED FOR RECORDING TONES. BITS 1 AND 2 SIMILARLY DRIVE THE CASSETTE PORT.

THE FASTER THAT BITS 0 AND 5 ARE SWITCHED (SET AND RESET), THE HIGHER THE PITCH (OR FREQUENCY) OF THE TONE THAT WILL BE ISSUED FROM THE VZ'S SPEAKER. THE NORMAL AUDIO SPECTRUM EXTENDS FROM 20 TO 20000 HERTZ OR CYCLES PER SECOND. FOR EXAMPLE, THE "MIDDLE C" ON A PIANO IS 262 HZ OR A PERIOD OF 3.8 MILLISEC. (PERIOD IS THE RECIPROCAL OF FREQUENCY)

THE QUALITY OR TIMBRE OF THE SOUND IS QUITE INDEPENDANT OF PITCH OR FREQUENCY. A TRUMPET SOUNDS QUITE DISTINCTIVE TO A TROMBONE BECAUSE OF THE DIFFERENT TIMBRE OF EACH INSTRUMENT. MATHEMATICALLY THIS MAY BE EXPRESSED AS THE PRESENCE OF "HARMONICS" BEING PRESENT ABOVE THE FUNDAMENTAL FREQUENCY. IN TERMS OF SOUND GENERATION, THIS IS CHARACTERIZED BY THE DUTY CYCLE OF THE WAVEFORM. NORMALLY IN THE VZ, THE TWO BITS AT 6800H ARE SWITCHED ON AND OFF AT THE SAME RATE. THIS RESULTS IN A SQUARE WAVE FORM OF OUTPUT THAT IS DEFFICIENT IN HARMONICS. THE DUTY CYCLE IS 50:50. THIS MEANS THAT THE "ON PERIOD" IS OF THE SAME DURATION AS THE "OFF PERIOD". BY VARYING THIS RATIO, SOME INTERESTING SOUNDS CAN BE GENERATED.

A THIRD PARAMETER GOVERNS SOUND. IN ADDITION TO PITCH AND TIMBRE, LOUDNESS PLAYS A PART. UNFORTUNATELY ON THE VZ THIS CANNOT BE VARIED INDEPENDANTLY OF TIMBRE.

VZ SOUND SYNTHESIS.

THE SIMPLEST WAY TO GENERATE SOUND ON THE VZ IS TO USE THE FACILITIES PROVIDED BY THE SOUND COMMAND IN THE BASIC INTERPETER. THIS IS VERY USEFUL AND CONVENIENT AND WAS ONE OF THE "IMPROVEMENTS" THAT THE VZ HAD OVER THE EARLIER TRS-80 COMPUTERS.

ENTER MY LISTING ENTITLED "STARWARS" AND LISTEN TO THE TUNE.

THERE ARE A COUPLE OF POINTS TO OBSERVE IN THIS TUNE. THE VOLUME AND TONE (TIMBRE) OF THE MELODY CANNOT BE VARIED. IN A COUPLE OF PLACES, THE TIMING OF THE TUNE IS DELAYED WHILST THE INTERPETER IS WRITING TO THE SCREEN. THE TIMING IS ALSO VARIED IN A COUPLE OF OTHER PLACES AS TRIPLETS (A NOTE OF A CERTAIN DURATION) ARE USED AND THESE ARE NOT PROVIDED IN THE INTERPETER. ALL-IN-ALL THOUGH, THE VZ MAKES A PRETTY FAIR FIST OF IT.

NEXT TIME WE WILL DISCUSS THE BASIC INTERPETER AND ACTUALLY THE MEANS BY WHICH SOFTWARE COMMANDS ARE CONVERTED IN TO PHYSICAL SOUND WAVES.

*** STAR WARS THEME BY BOB KITCH ***

```
010 '**********************
020 '*  STAR WARS THEME   *
030 '*   BY BOB KITCH     *
040 '*      20/8/90       *
050 '**********************
060 A%=PEEK(30777):POKE 30777,1:POKE 30744,1:'SPEEDS UP PRINTING.
070 CLS:CLS:PRINT@480,"A LONG TIME AGO"
080 PRINT"IN A GALAXY FAR,FAR AWAY"
090 PRINT"A GREAT ADVENTURE TOOK PLACE.";:FOR I=0 TO 1000:NEXT I
100 SOUND 6,1;6,1;6,1
105 PRINT:PRINT:PRINT"IT IS A PERIOD OF CIVIL WAR.";
110 SOUND 11,4;18,4
120 SOUND 16,1;15,1;13,1;23,4;18,2
130 SOUND 16,1;15,1;13,1;23,4;18,2
140 SOUND 16,1;15,1;16,1;13,4;6,2;6,1
145 PRINT:PRINT:PRINT"REBEL SPACESHIPS"
146 PRINT"FIGHTING FROM A HIDDEN BASE";
150 SOUND 11,4;18,4
160 SOUND 16,1;15,1;13,1;23,4;18,2
170 SOUND 16,1;15,1;13,1;23,4;18,2
180 SOUND 16,1;15,1;16,1;13,4;6,2;6,1
185 PRINT:PRINT"HAVE WON THEIR FIRST VICTORY";
190 SOUND 8,3;8,1;16,1;15,1;13,1;11,1
200 SOUND 11,1;13,1;15,1;13,2;8,1;10,2;6,2;6,1
210 SOUND 8,3;8,1;16,1;15,1;13,1;11,1
220 SOUND 18,1;13,1;13,4;6,2;6,1
225 PRINT:PRINT"AGAINST THE EVIL"
226 PRINT"GALACTIC EMPIRE.";
230 SOUND 8,3;8,1;16,1;15,1;13,1;11,1
240 SOUND 11,1;13,1;15,1;13,2;8,1;10,2;18,2;18,1
250 SOUND 23,2;21,1;20,2;18,1;16,2;15,1;13,2;11,1
260 SOUND 18,5
300 SOUND 6,1;6,1;6,1
305 PRINT:PRINT:PRINT"DURING THE BATTLE";
310 SOUND 11,4;18,4
320 SOUND 16,1;15,1;13,1;23,4;18,2
330 SOUND 16,1;15,1;13,1;23,4;18,2
340 SOUND 16,1;15,1;16,1;13,4;6,2;6,1
345 PRINT:PRINT"REBEL SPIES MANAGED TO STEAL"
346 PRINT"SECRET PLANS TO THE EMPIRE'S"
347 PRINT"ULTIMATE WEAPON";
350 SOUND 11,4;18,4
360 SOUND 16,1;15,1;13,1;23,4;18,2
370 SOUND 16,1;15,1;13,1;23,4;18,2
380 SOUND 16,1;15,1;16,1;13,4;18,2
385 PRINT:PRINT:PRINT"          THE DEATH STAR.":PRINT
390 SOUND 23,8
400 SOUND 23,1;23,1;23,1
410 SOUND 23,1
415 PRINT"- AN ARMOURED SPACE STATION"
416 PRINT"WITH ENOUGH POWER TO DESTROY AN ENTIRE PLANET.";
420 FOR I=0 TO 2000:NEXT I
430 CLS:PRINT@195,"MAY THE FORCE BE WITH YOU."
440 FOR I=0 TO 1000:NEXT I
450 PRINT@430,""
460 POKE 30777,A%:POKE 30744,0
500 END
```

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                 ;
                 ;   *** TANDY ***
                 ;
                 ;VERSION OF THE EPSON PATCH
                 ;FOR THE TANDY PRINTER
                 ;JULY 13 1989
                 ;
AA4F 3E C3               LD    A,0C3H
AA51 32 C1 79            LD    (79C1H),A
AA54 21 66 AA            LD    HL,STRT
AA57 22 C2 79            LD    (79C2H),HL
AA5A CD C9 01            CALL  01C9H
AA5D 21 11 AB            LD    HL,MES
AA60 CD A7 28            CALL  28A7H
AA63 C3 19 1A            JP    1A19H
AA66 3A 9C 78     STRT   LD    A,(789CH)
AA69 33                  INC   SP
AA6A 33                  INC   SP
AA6B B7                  OR    A
AA6C 79                  LD    A,C
AA6D C1                  POP   BC
AA6E FA 54 3B            JP    M,3B54H
AA71 CA 3A 03            JP    Z,033AH
AA74 E5                  PUSH  HL
AA75 F5                  PUSH  AF
AA76 21 9B 78            LD    HL,789BH
AA79 34                  INC   (HL)
AA7A 7E                  LD    A,(HL)
AA7B FE 4F               CP    4FH
AA7D 20 07               JR    NZ,POP
AA7F 36 00               LD    (HL),0
AA81 3E 0D               LD    A,0DH
AA83 CD BA 3A            CALL  3ABAH
AA86 F1           POP    POP   AF
AA87 E1                  POP   HL
AA88 FE 0D               CP    0DH
AA8A 20 07               JR    NZ,FORD
AA8C 3E 00               LD    A,0
AA8E 32 9B 78            LD    (789BH),A
AA91 3E 0D               LD    A,0DH
AA93 B7           FORD   OR    A
AA94 FA 9A AA            JP    M,TWOD
AA97 C3 BA 3A            JP    3ABAH
AA9A CB 77        TWOD   BIT   6,A
AA9C 28 3A               JR    Z,GRPH
AA9E E6 3F               AND   3FH
AAA0 F5                  PUSH  AF
AAA1 C5                  PUSH  BC
AAA2 D5                  PUSH  DE
AAA3 E5                  PUSH  HL
AAA4 6F                  LD    L,A
AAA5 26 00               LD    H,0
AAA7 3E 12               LD    A,12H
AAA9 CD BA 3A            CALL  3ABAH
AAAC 06 04               LD    B,4
AAAE E5                  PUSH  HL
AAAF D1                  POP   DE
AAB0 B7                  OR    A
AAB1 ED 5A        LP     ADC   HL,DE
AAB3 10 FC               DJNZ  LP
AAB5 E5                  PUSH  HL
```

```
AAB6 C1                POP  BC
AAB7 21 94 3B          LD   HL,3B94H
AABA 09                ADD  HL,BC
AABB 3E FF             LD   A,0FFH
AABD CD BA 3A          CALL 3ABAH
AAC0 06 05             LD   B,5
AAC2 7E           LP1  LD   A,(HL)
AAC3 23                INC  HL
AAC4 CD BA 3A          CALL 3ABAH
AAC7 10 F9             DJNZ LP1
AAC9 3E FF             LD   A,0FFH
AACB CD BA 3A          CALL 3ABAH
AACE 3E 1E             LD   A,1EH
AAD0 CD BA 3A          CALL 3ABAH
AAD3 E1                POP  HL
AAD4 D1                POP  DE
AAD5 C1                POP  BC
AAD6 F1                POP  AF
AAD7 C9                RET
AAD8 C5           GRPH PUSH BC
AAD9 47                LD   B,A
AADA 3E 12             LD   A,12H
AADC CD BA 3A          CALL 3ABAH
AADF 78                LD   A,B
AAE0 E6 0F             AND  0FH
AAE2 E5                PUSH HL
AAE3 CB 27             SLA  A
AAE5 4F                LD   C,A
AAE6 3E 1E             LD   A,1EH
AAE8 91                SUB  C
AAE9 4F                LD   C,A
AAEA AF                XOR  A
AAEB 47                LD   B,A
AAEC 21 AF 02          LD   HL,02AFH
AAEF 09                ADD  HL,BC
AAF0 7E                LD   A,(HL)
AAF1 47                LD   B,A
AAF2 23                INC  HL
AAF3 7E                LD   A,(HL)
AAF4 4F                LD   C,A
AAF5 78                LD   A,B
AAF6 CD BA 3A          CALL 3ABAH
AAF9 CD BA 3A          CALL 3ABAH
AAFC CD BA 3A          CALL 3ABAH
AAFF 79                LD   A,C
AB00 CD BA 3A          CALL 3ABAH
AB03 CD BA 3A          CALL 3ABAH
AB06 CD BA 3A          CALL 3ABAH
AB09 3E 1E             LD   A,1EH
AB0B CD BA 3A          CALL 3ABAH
AB0E E1                POP  HL
AB0F C1                POP  BC
AB10 C9                RET
AB11 0D           MES  DEFB 0DH
                       EQU  $
AB12 -  TEXT  -        *TANDY PRINTER PATCH LOADED*
AB2C 0D                DEFB 0DH
AB2D 00                NOP
AB2E 00                NOP
AB2F 00                NOP
BYTES FREE :- 21359 ERRORS : 00000
```

ASSEMBLER ROUTINES PART II

BY BEN HOBSON

WORKING OUT CODES FOR SCREEN ADDRESSES

UNLIKE BASIC, WHICH ADDRESSES EACH INDIVIDUAL DOT WITH THE SET COMMAND, ASSEMBLER ADDRESSES GRAPHICS BY BYTES. A BYTE CONSISTS OF FOUR DOTS. EACH DOT HAS TWO BITS TO INDICATE THE COLOUR.

SO FOR ONE ADDRESS-LETS JUST SAY 7000H (THE FIRST SCREEN ADDRESS).

```
(PIXEL NUMBER)           1     2     3     4
                      *********************
(CONTENTS)            * 00 * 10 * 11 * 01 *
                      *********************
COLOR               GREEN  RED      BLUE     YELLOW
                    BUFF   MAGENTA  ORANGE   CYAN
(BINARY NUMBER)      00     11       10       01
```

SO AS YOU CAN SEE THE PIXELS ARE REPRESENTED BY A BINARY VALUE. THEREFORE THE ABOVE BYTE WOULD BE GREEN (OFF), BLUE, RED AND YELLOW, IF THE BACKGROUND COLOUR WAS GREEN (COLOR,0). SO TO DISPLAY THIS YOU SIMPLY LOAD THE BINARY VALUE OF 00101101 OR 45 DECIMAL INTO ADDRESS 7000 HEX.

THIS IS DONE BY:

```
        LD      A,45          ;NUMBER TO LOAD TO ADDRESS
        LD      (7000H),A     ;ADDRESS TO LOAD IT TO
```

IT'S THAT SIMPLE!!!!!

PROGRAM NINE - PERSON:

A GOOD EXAMPLE TO SHOW THE USE OF THIS IS TO DRAW A PERSON.

```
        LD    A,8           ;ENTER MODE(1)
        LD    (6800H),A
        LD    HL,7000H
        LD    DE,7001H
        LD    BC,7FFH
        LD    (HL),0
        LDIR
        LD    A,40          ;FIRST CODE
        LD    (28672),A     ;FIRST ADDRESS
        LD    (28704),A     ;SECOND ADDRESS
        LD    (28768),A     ;THIRD ADDRESS
        LD    (28800),A     ;FOURTH ADDRESS
        LD    A,170         ;SECOND CODE
        LD    (28736),A     ;FIFTH ADDRESS
        LD    (28832),A     ;SIXTH ADDRESS
        LD    B,100         ;START OF DELAY
DLY     LD    HL,6000
DLY2    DEC   HL
        LD    A,H
        OR    L
        JP    NZ,DLY2
        DJNZ  DLY
        JP    7B00H
```

PROGRAM TEN - FILLER:

THIS PROGRAM DEMONSTRATES THE USE OF GRAPHICS AND THE SCANNING OF KEYS. WHEN IT IS RUN IT WAITS FOR THE COMMA KEY TO BE PRESSED. IF THIS IS DONE IT FILLS UP THE SCREEN WITH GRAPHICS UNTIL THE KEY IS RELEASED OR THE END OF THE VIDEO SCREEN IS REACHED. IF THIS HAPPENS OR THE 'Q' KEY IS PRESSED THE PROGRAM JUMPS BACK TO THE ASSEMBLER.

```
00001         LD    A,8
00002         LD    (6800H),A
00003         LD    HL,7000H
00004         LD    DE,7001H
00005         LD    BC,7FFH
00006         LD    (HL),0
00007         LDIR
00008         LD    HL,7000H
00009         LD    DE,7001H
00010         PUSH  DE
00011         PUSH  HL
00012 SCAN    CALL  2EF4H
00013         OR    A
00014         JR    Z,SCAN
00015         CP    51H
00016         JR    NZ,STWO
00017         JP    QUIT
00018 STWO    CALL  2EF4H
00019         OR    A
00020         JR    Z,STWO
00021         CP    2CH
00022         JR    NZ,SCAN
00023         POP   DE
00024         POP   HL
00025         INC   DE
00026         INC   HL
00027         LD    BC,1
00028         LD    (HL),255
00029         LDIR
00030         PUSH  HL
00031         LD    HL,77FFH
00032         RST   18H
00033         JR    C,QUIT
00034         PUSH  DE
00035         JP    SCAN
00036 QUIT    CALL  1C9H
00037         JP    7B00H
```

LINE 1 CLEARS THE VIDEO SCREEN
LINE 8 SETS UP THE VIDEO ADDRESSES
LINE 12 SCANS FOR THE KEYS BEING PRESSED
LINE 15 WAS IT 'Q' (FOR QUIT)
LINE 21 WAS IT ',' (COMMA)
LINE 23 DRAW DOT
LINE 30 CHECK IF END OF VIDEO IS REACHED, IF SO GO TO QUIT
LINE 36 QUIT

PROGRAM ELEVEN – MOVE DOT:

THIS PROGRAM USES THE 'Q A M , KEYS TO MOVE A DOT AROUND THE SCREEN. IF THE TOP OR BOTTOM OF THE SCREEN IS REACHED THE DOT DISAPPEARS BUT IT DOES NOT KEEP GOING. WHEN YOU CHANGE DIRECTION IT REAPPEARS. IF THE SIDES OF THE SCREEN ARE REACHED IT WRAPS AROUND TO THE OTHER SIDE BUT ON THE NEXT LINE.

THE PROGRAM MAKES USE OF LOOPS, CALLS AND RETS, KEY INPUTS AND GRAPHICS. IT COULD BE THE BASIS OF A GAME. (THEY ALL START SOMEWHERE). THE COMMENTS HERE ONLY APPLY TO THE START OF THE ROUTINES. IF YOU STUDY THEM CAREFULLY YOU SHOULD BE ABLE TO FIGURE THEM OUT.

```
00001         LD    A,8
00002         LD    (6800H),A
00003         LD    HL,7000H
00004         LD    DE,7001H
00005         LD    BC,2047
00006         LD    (HL),0
00007         LDIR
00008         LD    A,40
00009         LD    HL,73F0H
00010         LD    (HL),A
00011         PUSH  HL
00012 SCNQ    CALL  2EF4H
00013         OR    A
00014         JR    Z,SCNQ
00015         CP    81
00016         JR    NZ,SCNA
00017         JR    UP
00018 SCNA    CALL  2EF4H
00019         OR    A
00020         JR    Z,SCNA
00021         CP    41H
00022         JR    NZ,SCNM
00023         JP    DOWN
00024 SCNM    CALL  2EF4H
00025         OR    A
00026         JR    Z,SCNM
00027         CP    4DH
00028         JR    NZ,SCNR
00029         JR    LEFT
00030 SCNR    CALL  2EF4H
00031         OR    A
00032         JR    Z,SCNR
00033         CP    2CH
00034         JR    NZ,SCNX
00035         JR    RIGH
00036 SCNX    CALL  2EF4H
```

```
00037      OR   A
00038      CP   58H
00039      JR   NZ,SCNQ
00040      JP   EXIT
00041 RIGH POP  HL
00042      LD   A,0
00043      LD   (HL),A
00044      INC  HL
00045      PUSH HL
00046      LD   DE,77E0H
00047      RST  18H
00048      JR   NC,FIX1
00049      LD   DE,701F
00050      RST  18H
00051      JR   C,FIX1
00052      JR   DRAW
00053 FIX1 POP  HL
00054      DEC  HL
00055      PUSH HL
00056      JR   SCNQ
00057 LEFT POP  HL
00058      LD   A,0
00059      LD   (HL),0
00060      DEC  HL
00061      PUSH HL
00062      LD   DE,77E0H
00063      RST  18H
00064      JR   NC,FIX2
00065      LD   DE,701FH
00066      RST  18H
00067      JR   C,FIX2
00068      JR   DRAW
00069 FIX2 POP  HL
00070      INC  HL
00071      PUSH HL
00072      JR   SCNQ
00073 DRAW CALL DLAY
00074      LD   B,100
00075 LOP3 LD   HL,100
00076      DEC  HL
00077      DJNZ LOP3
00078      POP  HL
00079      LD   A,40
00080      LD   (HL),A
00081      PUSH HL
00082      JP   SCNQ
00083 UP   POP  HL
00084      LD   A,0
00085      LD   (HL),0
00086      CALL DECR
00087      PUSH HL
00088      LD   DE,77E0H
00089      RST  18H
00090      JR   NC,FIX3
00091      LD   DE,701F
00092      RST  18H
00093      JR   C,FIX3
00094      JR   DRAW
00095 FIX3 POP  HL
00096      CALL INCR
00097      PUSH HL
00098      JP   SCNQ
00099 DOWN POP  HL
00100      LD   A,0
00101      LD   (HL),A
00102      CALL INCR
00103      PUSH HL
00104      LD   DE,77E0H
00105      RST  18H
00106      JR   NC,FIX4
00107      LD   DE,701FH
00108      RST  18H
00109      JR   C,FIX4
00110      JR   DRAW
00111 FIX4 POP  HL
00112      CALL DECR
00113      PUSH HL
00114      JP   SCNQ
00115 EXIT CALL 01C9H
00116      CALL 3450H
00117      CALL DLAY
00118      JP   7B00H
00119 INCR LD   B,20H
00120 LOP1 INC  HL
00121      DJNZ LOP1
00122      RET
00123 DECR LD   B,20H
00124 LOP2 DEC  HL
00125      DJNZ LOP2
00126      RET
00127 DLAY LD   B,100
00128 DLY1 LD   HL,75
00129 DLY2 DEC  HL
00130      LD   A,H
00131      OR   L
00132      JP   NZ,DLY2
00133      DJNZ DLY1
00134      RET
```

LINE 1 CLEARS THE VIDEO SCREEN
LINE 11 SCAN FOR 'Q' BEING PRESSED
LINE 23 SCAN FOR 'M' BEING PRESSED
LINE 35 SCAN FOR 'X' BEING PRESSED (EXIT)
LINE 56 MOVE DOT TO THE LEFT
LINE 82 MOVE DOT UPWARDS
LINE 114 JUMP BACK TO THE ASSEMBLER
LINE 122 DECREMENT ROUTINE FOR UP
LINE 8 SETS UP DOT'S START POSITION
LINE 17 SCAN FOR 'A' BEING PRESSED
LINE 29 SCAN FOR ',' BEING PRESSED
LINE 40 MOVE DOT TO THE RIGHT
LINE 72 DRAW DOT IN ITS NEW POSITION
LINE 98 MOVE DOT DOWNWARDS
LINE 118 INCREMENT ROUTINE FOR DOWN
LINE 126 DELAY ROUTINE

MODS TO DSE. DISC DATABASE
BY JOHN D'ALTON - NOV 1990

FOR FOLK WHO WISH TO MODIFY THEIR PRESENT *PM DB* UNITS AND REQUIRE HELP TO "UNLOCK" IT PLEASE CONTACT MYSELF, THE EDITOR OF THIS MAGAZINE, MR LARRY TAYLOR OR SOME OTHER VZ "SPECIALISTS".

JOHN D'ALTON 39 AGNES STREET TOOWONG QLD 4066
LARRY TAYLOR 4 COLUMBIA COURT SPRINGWOOD QLD 4127
THE EDITOR H V VZ JOURNAL PO BOX 161 JESMOND 2299

ONLY REQUESTS BY MAIL THAT INCLUDE A SSAE ENVELOPE WILL BE ANSWERED.

REFER TO MY PREVIOUS ARTICLE IN THIS MAGAZINE TITLED "UTILITIES FOR DSE. DISC DATABASE" WHERE I OUTLINED SOME VERY USEFUL MODS THAT I HAVE DEVELOPED AND NOW PASS ON TO INTERESTED FOLK.

THE DATABASE UNIT WHICH THE AUTHOR MR. PHIL MAUDE WROTE WAS SOLD BY DSE. HE HAS NOW LIFTED COPYRIGHT ON IT WHICH NOW ALLOWS THESE MODIFICATIONS TO BE MADE. THAT UNIT I CALL *PM DB* AND FOR THE NEW MODIFICATIONS I SHALL CALL THE UNIT *PM DB JD M.*

I WILL PRESENT THE ARTICLES IN PRINTED FORM ONLY, NOT ON DISC. IT IS UP TO THE READER TO TYPE IN THE BASIC MODS. YOU WILL NEED TO UNDERSTAND A LITTLE OF THE BASIC LANGUAGE TO PERHAPS DO ANY REQUIRED CORRECTIONS. HOPEFULLY THERE WILL NOT BE TOO MANY "BUGS" FOR YOU TO IRON OUT. THE MODS ARE PROGRAMMED IN BLOCK FORM SO YOU SHOULD NOT HAVE TOO MUCH TROUBLE. THERE ARE SOME PROGRAMMING REMARKS STILL REMAINING AND CAN BE REMOVED IF DESIRED. IN SOME CASES YOU MAY HAVE TO ALTER DIM STATEMENTS AND SUCH LIKE. YOU MAY ALSO HAVE TO INITIALISE NEW VARIABLES THAT I HAVE USED.

I DO NOT ACCEPT ANY RESPONSIBILITY FOR ANY ERRORS IN THE BASIC PROGRAMMES OR FOR ANY LOSS OR CORRUPTION OF DATA FILES. YOU SHOULD MAKE BACK-UP OF ALL FILES IN ANY CASE. IN MY PREVIOUS ARTICLE I NUMBERED THE MODS 1 TO 7. I WILL NOT PRESENT THE MODS IN THIS ORDER. THE MOD NUMBERED 2 WIL BE THE FIRST ONE. SO HERE GOES. BEST OF LUCK.

2. ALTER THE SYSOP DATA

WITH THE ORIGINAL *PM DB* THERE WAS NO WAY OF ALTERING THIS ONCE IT WAS MADE. IF AFTER SOME TIME (WEEKS/MONTHS) YOU WANTED TO DO THIS, IT MEANT STARTING FROM SCRATCH, SETTING UP A NEW FILE SYSOP AND TYPING IN ALL THE RECORDS DATA AGAIN. SAY YOUR FILE WAS CALLED "AUSTRALIAN STAMPS" AND YOU NEED TO RENAME IT "AUSTRALIAN STAMPS 1" THEN THIS CAN BE DONE ON THE FIRST PROMPT. THE AMOUNT OF CHARS (CHARACTERS) DOES NOT HAV TO BE THE SAME.

THE NUMBER OF PRINTER COLUMNS CAN ONLY BE INCREASED (AT PRESENT). THIS TIES IN WITH THE AMOUNT OF FIELDS, CHARS PER FIELD AND SPACES BETWEEN FIELDS. THE NAME OF ONE OR MORE FIELDS CAN BE ALTERED WITHOUT COUNTING THE LENGTH OF THE NAME. THE LENGHT OF A FIELD CAN BE INCREASED (NOT DECREASED AT PRESENT). ONLY ONE FIELD LENGTH CAN BE ALTERED AT A TIME AND REMEMBER TO CALCULATE THIS IN RELATION TO THE "AMOUNT OF PRINTER COLUMNS".

NOW TO THE MODIFICATIONS

LINES 20, 30 AND 31.

```
20 DIM FN$(25),FL(25),L$(100),F$(25),N$(100),D$(100),LP(20)
22 'FOR TRANSFER USE DIM N1$(200),K$(200),LL$(200)
30 TL=0:J=0:I=0:X=0:N=0:FL=0:F=0:R=0:A=0
31 M1$="-------------------------------":REM 31 MINUSES
```

LINE 9072.

```
9072 GOSUB 9500:RETURN
```

THE ACTUAL SECTION THAT ALTERS THE SYSOP THAT YOU TYPE IN:-

LINES 9500 TO 9576.

```
9500 'ALTER FIELD NAMES
9504 CLS:PRINT"FILE NAME = ";FL$
9505 PRINT"AMOUNT OF FIELDS = ";N:LP(1)=1
9507 FOR L=1 TO N:LP(L+1)=LP(L)+1+FL(L)
9509 PRINT"LEFT TAB = ";LP(L);"LENGTH =";FL(L):NEXT
9514 PRINT:PRINT"ALTER FIELDS OR PRINTER COLUMNS"
9516 INPUT" Y/N ";Q$:IF Q$="N" RETURN ELSE 9518
9518 PRINT"FILENAME IS ";FL$;INPUT"OK Y/N ";Q$
9520 IF Q$="Y" THEN 9524 ELSE 9521
9521 INPUT"TYPE IN NEW FILENAME
        ";FL$:REM 11 SPACES
9524 PRINT"AMOUNT OF PRNTR COLS = ";PT:INPUT"PRINTER OK Y/N ";Q$
9525 IFQ$="Y"THEN 9530 ELSE INPUT"PRINTER COLS";PT:CLS:GOTO 9530
9530 CLS
9532 FOR Z=0 TO N
9534 PRINT"FIELD ";Z;"IS ";FN$(Z)
9537 NEXT Z
9540 PRINT M1$:INPUT"WHICH FIELD TO ALTER ";Z:PRINT M1$
9542 PRINT"FIELD ";Z;"WAS   "FN$(Z)
9543 PRINT"  FIELD LENGTH = ";FL(Z)
9545 PRINT
9550 PRINT"   TYPE NEW FIELD NAME"
9552 INPUT"        ";FN$(Z):PRINT M1$:REM 8 SPACES
9554 PRINT"FIELD";Z;"IS NOW ";FN$(Z):PRINT
9560 INPUT"ALTER FIELD LENGTH Y/N ";Q$:IF Q$="N" THEN 9565
9562 INPUT"TYPE NEW FIELD LENGTH ";FL(Z)
9564 PRINT"NEW FIELD LENGTH = ";FL(Z):PRINT M1$
9565 INPUT"ADD MORE OR DELETE FIELDS Y/N ";Q$
9566 IF Q$="Y"THEN 9567 ELSE 9570
9567 INPUT"<A>DD MORE OR <D>ELETE ";Q$:IF Q$="A"THEN9568ELSE9569
9568 INPUT"HOW MANY MORE ";Z2:N=N+Z2:CLS:GOTO 9570
9569 INPUT"HOW MANY LESS ";Z2:N=N-Z2:CLS:GOTO 9570
9570 PRINT M1$:PRINT"MORE TO ALTER OR ADD ";
9572 INPUT"MORE FIELDS Y/N ";Q$:IF Q$="Y"THEN 9500
9574 CLS:PRINT"   IS DISC IN DRIVE?":INPUT"   PRESS RETURN";Q$
9575 SOUND 30,2;20,2:ERA"SYSOP"
9576 GOSUB 9039:RETURN
```

WHEN YOU ARE FINISHED THE OLD SYSOP IS ERASED AND NEW SYSOP IS SAVED.

THE NEXT NORMAL OPERATION OF *PM DM* IS TO LOAD THE RECORDS FILE. IF WITH *PM DB JD M* YOU HAVE ALTERED THE LENGTH OF A FIELD, THE NEXT MOD MUST BE TYPED IN. THIS IS LINE 1530. ALSO LINES 1540 TO 1592 AND LINES 9400 TO 9450.

LINE 1530.

```
1530 SOUND 25,1;0,9;0,9:
```

LINES 1540 TO 1592

```
1540 ' INSERT SPACES & REPACK
1542 CLS:PRINT"  ";I-1;" RECORDS WERE LOADED"
1543 PRINT:PRINT" IF A FIELD LENGTH HAS BEEN ALT-ERED AND SAV";
1544 PRINT"ED AS SYSOP, THEN THE EXISTING DATA HAS TO BE ";
```

LINES 1540 TO 1592 CONTINUED

```
1545 INPUT"  WAS A FIELD LENGTH  CHANGED       Y/N";Q$
1547 IF Q$="N"THEN GOTO 500
1550 PRINT M1$:INPUT"WHICH FIELD ";FL
1552 INPUT"# OF ADDED SPACES ";SP:SQ$=" ":L$="":SP$="":SR=SP
1556 FOR Z=1 TO SP:SP$=SP$+" "
1560 IF LEN(SP$)<SP THEN 1556
1562 PRINT:PRINT"  DATA BEING REPACKED"
1564 FOR I=1 TO R:GOSUB 9400
1566 FOR J=1 TO N
1568 IF J=FL THEN SO$=SP$+" " ELSE SO$=SQ$
1570 TS$=L$+F$(J)+SO$:N$(I)=N$(I)+TS$:NEXT J
1571 L$(I)=N$(I)
1583 '
1585 NEXT I
1588 CLS:PRINT:PRINT:PRINT" NOW TO RESAVE DATA ONTO DISC"
1590 PRINT:INPUT"INSERT DISC & PRESS RETURN";Q$:GOSUB 4000
1592 GOTO 500
1599 END
```

LINES 9400 TO 9450

```
9400 REM UNPACK STRING WHEN FLD LGT ALTERED
9402 SP=SR:L$=""
9410 FOR J=1 TO N:IF J=1 THEN X=1
9412 IF J=FL THEN FL(J)=FL(J)-SP
9420 F$(J)=MID$(L$(I),X,FL(J))
9430 X=1+X+FL(J)
9435 IF J=FL THEN FL(J)=FL(J)+SP
9450 NEXT J:RETURN
```

MR MAUDE DESIGNED *PM DB* TO "PACK" THE DATA TOGETHER, SEPERATED WITH A SPACE. EI.

FIELD 1 IS 10 CHARS LONG AND FIELD 2 IS 5 CHARS LONG. EI.
FIELD 1 DATA IS "SMITH" AND FIELD 2 DATA IS "QLD".
BEFORE PACKING THIS IS, (A DASH REPRESENTS A SPACE):-

SMITH------QLD---
AFTER PACKING IS:-
SMITH-QLD-

NOW IF YOU ALTERED THE LENGTH OF FIELD 1 FROM 10 TO 15 THEN THE EXTRA 5 SPACES MUST BE FITTED INTO THAT FIELD. IF THE WORD IS "THOMASETI" THEN 6 EXTRA SPACES ARE PACKED IN, PLUS THE END OF FIELD (EOF) SPACE.

AFTER THE RECORDS FILE HAS BEEN LOADED YOU ARE ASKED IF A FIELD LENGTH HAS BEEN ALTERED. IN THIS CASE ANSWER YES. YOU THEN TYPE IN THE AMOUNT OF EXTRA SPACES, EI, 5 IN THIS CASE. THE RE-PACKING OF THE FIELD ALTERED OF ALL THE RECORDS IS NOW DONE. EVERY FIELD AFTER THE FIELD ALTERED IS MOVED TO THE RIGHT BY 5. THIS IS CARRIED OUT TO EVERY RECORD. SO IF THE END OF THE RECORD COUNTED TO 90 CHARS, IT WOULD NOW BE 95. UNDERSTAND?

THIS RE-PACKING TAKES A MINUTE OR SO, DEPENDING ON THE NUMBER OF RECORDS ON THE FILE. THE OLD FILE IS ERASED AND THE NEW FILE IS SAVED. GO STAIGHT TO THE "PRINT FILE" ON PRINTER AND ALL SHOULD BE OK. TEST ON A SMALL FILE OF SAY 5 RECORDS AT FIRST. IF ALL OK THEN ANOTHER FIELD LENGTH CAN BE ALTERED TO RECHECK.

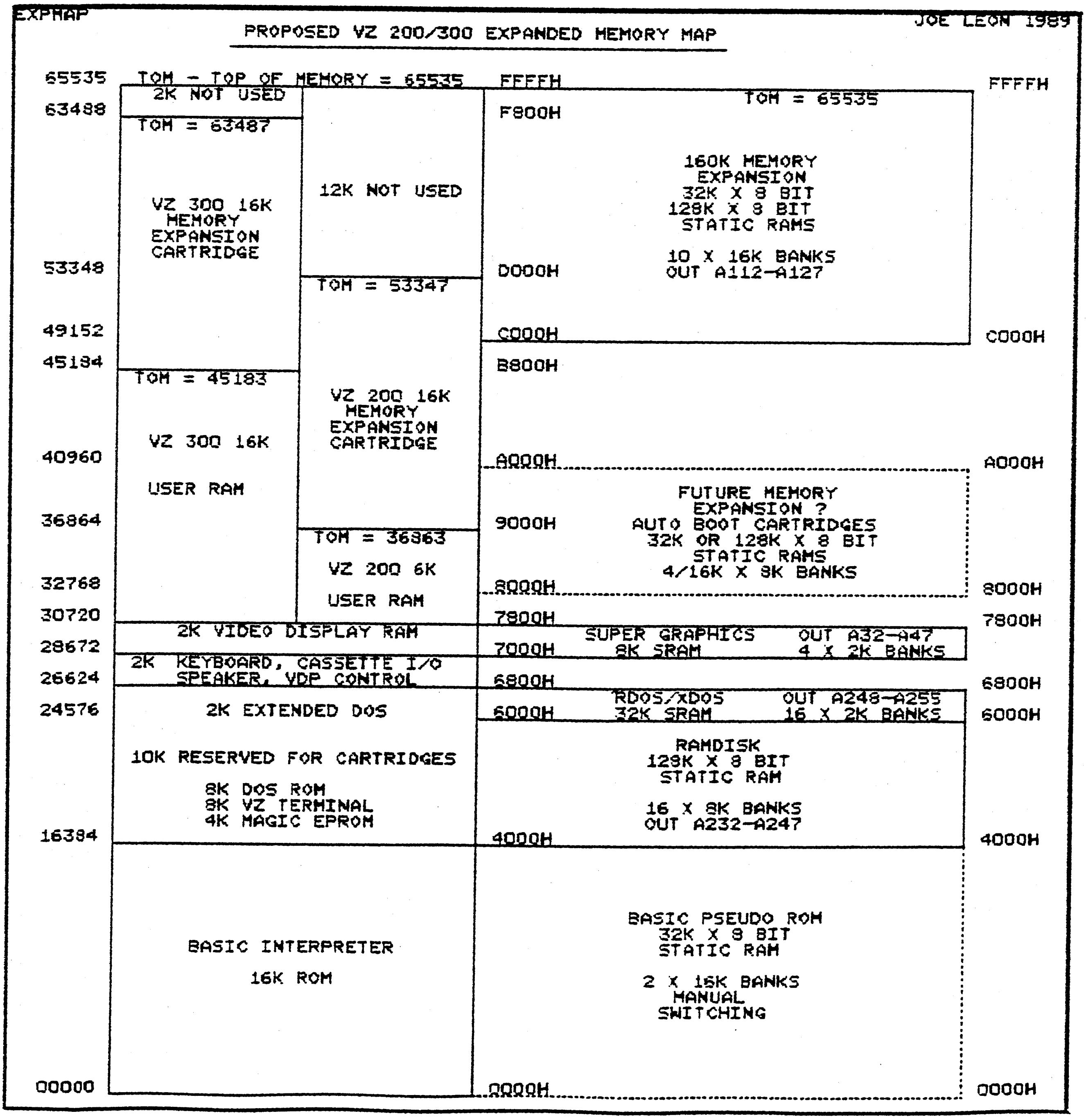
PROPOSED VZ MEMORY EXPANSION STANDARDS BY JOE LEON

AS MENTIONED IN LAST ISSUE THE AVAILABILITY OF CHEAP LARGE CAPACITY MEMORY DEVICES BOTH STATIC AND DYNAMIC CAN EXPAND THE VZ HORIZONS CONSIDERABLY. WITH COMPATIBILITY OF PREVIOUS EXPANSIONS AND STANDARDS IN MIND I PROPOSE AND ADD THE FOLLOWING STANDARDS:

MAIN MEMORY	- C000H-FFFFH	- OUTPUT PORT A112-A127	- 16K BANKS
AUTO BOOT	- 8000H-9FFFH	- OUTPUT PORT A216-A231	- 8K BANKS
SUPER GRAPHICS	- 7000H-77FFH	- OUTPUT PORT A32-A47	- 2K BANKS
RDOS	- 6000H-67FFH	- OUTPUT PORT A232-A247	- 2K BANKS
RAMDISK	- 4000H-5FFFH	- OUTPUT PORT A248-A255	- 8K BANKS

AUTO BOOT = MORE ON IT NEXT ISSUE.
RDOS = RAM DISK OPERATING SYSTEM. WILL CONTROL RAMDISK AND ITS DATA STORAGE/RETRIEVAL OPERATIONS.
RAMDISK = VERY FAST MEMORY BASED PROGRAM & DATA STORAGE/RETRIEVAL AREA SIMILIAR TO DISK DRIVE.

NOTE: ANY COMMENTS ON ABOVE PLEASE CONTACT THE EDITOR.



*** NEW – FOR SALE – NEW ***

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<1> VZ DISASSEMBLER

WHAT, ANOTHER DISASSEMBLER? BUT, YOU HAVE ALREADY GOT ONE? THIS ONE IS DIFFERENT!

THIS PROGRAM IS ENTIRELY WRITTEN IN MACHINE CODE. IT ACTUALLY RUNS ABOUT 40 TIMES FASTER THAN D.S.E.'S DISASSEMBLER (OR ANY ONE ELSE'S). IT WILL DISASSEMBLE ANY PROGRAM THAT YOU CAN BLOAD INTO MEMORY. IT WORKS WITH ANY VZ CONFIGURATION. IT DISASSEMBLES EVEN THE 88 EXTRA Z80 OPCODES THAT ZILOG DOESN'T ADMIT TO.

PRICE? ONLY $25.00 - TAPE AND DISK VERIONS AVAILABLE.

PRICE INCLUDES HARDCOPY MANUAL. INTERESTED? YOU MAY PURCHASE THIS PROGRAM FROM PETER HICKMAN, FOR ADDRESS SEE BELOW.

BRAND NEW - VZ SERIAL INTERFACE PROGRAM - BRAND NEW

<2> VZ MODEM SOFTWARE

DID YOU WANT TO TALK TO OTHER COMPUTERS VIA A MODEM? DID YOU BUY THE DSE TERMINAL EPROM, ONLY TO DISCOVER THAT IT ONLY WORKS WITH TAPE. IT ONLY ALLOWS YOU TO PRINT FILES, NOT SAVE THEM OR SEND THEM!

YOUR PROBLEMS ARE SOLVED! THE HICKMAN BROTHERS, PETER AND ANDREW, HAVE A BRAND NEW PROJECT WHICH WILL ALLOW YOU TO SEND, RECEIVE & SAVE FILES VIA A MODEM. IT WORKS WITH DISK!

SALE PRICE $25.00 ONLY

INCLUDED ARE INSTRUCTIONS FOR THE HARDWARE MODIFICATIONS.

A SMALL MODIFICATION IS NEEDED TO YOUR DISK CONTROLLER. YOUR USER GROUP MAY HELP YOU MODIFY YOUR COMPUTER TO USE THIS EXCITING NEW SOFTWARE! IF YOU HAVE THE FUNCTION KEYS MOD AS WELL, THEN YOU WILL BE ABLE TO SEND EXTRA ASCII CHARACTERS SUCH AS:-

{¦}~_

THE MANUAL IS SUPPLIED ON DISK FOR YOU TO PRINT OUT WITH YOUR DISK VERSION OF E & F WORDPROCESSOR. IF YOU DO NOT OWN AN E & F WORDPROCESSOR PROGRAM, PLEASE ENCLOSE ANOTHER $5.00 (TOTAL $30.00) FOR PHOTOCOPYING AND POSTAGE OF THE MANUAL.

FOR PURCHASE OR MORE INFORMATION CONTACT:-
PETER HICKMAN P.O. BOX 8, WERRINGTON N.S.W. 2747.

FOR SALE E & F W.P.PATCH 3.3

PATCH 3.3 WRITTEN BY DAVE MITCHELL WILL CONVERT YOUR E & F TAPE WORD PROCESSOR FOR FULL DISK USE WHILE RETAINING ALL ORIGINAL FUNCTIONS. BELOW ARE ADDED DISK COMMANDS & FUNCTIONS :-

LOAD, SAVE, ERASE, RENAME, DIRECTORY, INITIALIZE, UPDATE, DRIVE 1 & 2, SHIFTLOCK & IMBEDDED PRINTER CONTROL CODES PLUS CTRL+P WHICH BYPASSES PRINT MENU AND PRINTS TO SCREEN OR PRINTER. A ROUTINE IS ALSO PROVIDED TO CONVERT YOUR BASIC PROGRAM OR SOURCE CODE FILES INTO WORD PROCESSOR FILES.

PATCH 3.3 HAS PROVISION FOR IMBEDDING PRINTER CONTROL CODES IN TEXT AND FAST SAVING AND LOADING OF TEXT DATA TO AND FROM DISK USING BLOCK SAVE/LOAD TECHNIQUES. PRINTER CONTROL CODES CAN BE SAVED TO TAPE OR DISK.

BSTWP.F - THIS UTILITY PROVIDED WITH PATCH 3.3 WILL CONVERT BASIC PROGRAMS AND ED/ASS. SOURCE CODE FILES INTO WORD PROCESSOR FILES.

SYSTEM REQUIREMENTS - VZ 300 + 16K RAM PACK - VZ 200 + 26K

PATCH 3.3 IS COPYRIGHT TO AND ONLY AVAILABLE FROM :-
HUNTER VALLEY VZ USERS' GROUP P.O.BOX 161 JESMOND 2299
N.S.W. AUSTRALIA - PHONE JOE LEON (049) 51 2756

PRICE - AUS/NZ AU$20.00 - UPDATE - AUS-$10.00 - NZ-AU$11.00.
UPDATING AVAILABLE ONLY TO PREVIOUS PURCHASERS OF PATCHES.

FOR MORE INFORMATION WRITE TO H.V.VZ.U.G. ENCLOSING A SSAE.

EXTENDED DOS V1.3 - $15.00

UPDATED VERSION WITH EXTRA COMMANDS ADDED :-

OLD COMMANDS - MERGE, DIRA, LDIRA, DIRB, LDIRB, OLD, OLD., DEC, HEX, STATUSA AND LSTATUSA. STATUSA AND LSTATUSA ALSO WORKS WITH VERSION 1.0 DOS.

NEW COMMANDS :-

MENU - LOADS AND RUNS BINARY OR TEXT MENU PROGRAM FROM DISK.
CODE - SIMPLIFIES USING PRINTER CONTROL CODES DIRECTLY OR FROM WITHIN A PROGRAM.
LTAB - IS FOR SETTING OF LEFT MARGIN.
MOVE - MOVES BASIC FILE FROM DISK TO CHOSEN MEMORY ADDRESS.
UPD - ERASES OLD FILE AND SAVES WITH SAME FILE NAME.

MENU/FILE COPIER - $15.00

THIS UTILITY WILL READ YOUR DISK DIRECTORY AND PRESENT YOU WITH SEVERAL OPTIONS. USING THE CURSOR YOU CAN RUN/BRUN ANY PROGRAM OR SELECT FILE COPY, REN, ERASE, DRIVE 1 OR 2, ETC. BESIDES COPYING TEXT AND BINARY FILES ALL OTHER FILES CAN BE COPIED AS WELL EXEPT FOR DATA FILES.

FOR PURCHASE OR INFORMATION CONTACT DAVE MITCHELL - (079) 27 8519
24 ELPHINSTONE ST. NORTH ROCKHAMPTON QUEENSLAND 4701

FOR INFORMATION OR DEMONSTRATION IN NEWCASTLE AREA CONTACT :-
JOE LEON - (049) 51 2756 - 22 DRURY STREET WALLSEND NSW 2287

CONTRIBUTIONS TO THE HUNTER VALLEY VZ JOURNAL :-

IF YOU ARE THINKING OF CONTRIBUTING TO THE JOURNAL THE PREFERED FORMAT IS BASIC LISTINGS, WORD PROCESSOR OR SOURCE CODE FILES ON TAPE OR DISK. FILES FROM THE FOLLOWING WORD PROCESSORS CAN BE ACCEPTED :-

E & F TAPE OR DISK PATCH 3.1-3.3, WORDPRO CARTRIDGE, WORDPRO PATCH, MOST SOURCE CODE FILES AND ALL QUICKWRITE WORD PROCESSOR FILES.

** CLUB MEETINGS - ALL WELCOME **

FIRST FRIDAY OF MONTH - NO MEETING IN JANUARY 1991

VENUE - JESMOND NEIGHBOURHOOD CENTRE MORDUE PARADE JESMOND
(REAR STOCKLAND MALL - BIG W)

DECEMBER 7 - REVIEWING 1990 & PREVIEWING 1991
BASIC - MACHINE CODE & ASSEMBLY CONTINUED
CHRISTMAS PARTY - BRING FAMILY - FRIENDS - PLATE
HOT & COLD LIQUID REFRESHMENTS PROVIDED - ALL WELCOME

JANUARY 4 - NO MEETING

FEBRUARY 1 - BASIC - MACHINE CODE & ASSEMBLY CONTINUED
DEMO - IF READY 320K MEMORY EXPANSION
NOTIFIED IN NEXT ISSUE IF OTHERWISE

FUTURE DEMONSTRATIONS -

EPROM PROGRAMMER & ERASER, AUCTION NIGHT - USING THE VZ, RITTY, ETC. IF YOU HAVE ANY IDEAS FOR A DEMONSTRATION OR A SUBJECT THEN PLEASE LET YOUR COMMITTEE KNOW.

CLUB COMMITTEE & SUBSCRIPTIONS -

PRESIDENT --------- ROSS WOODS --- (049) 71 2843
SECRETARY/EDITOR -- JOE LEON ----- (049) 51 2756
TREASURER --------- GARY BULLEY -- (049) 54 7561
COMMITTEE MEMBERS - COLIN BRIDGE - PETER JONES

SUBSCRIPTION TO - AUST. - 6 MONTHS $11.00 - 12 MONTHS $21.00
H.V.VZ.JOURNAL - N. Z. - 6 MONTHS $13.00 - 12 MONTHS $26.00
NOTE: PRICES INCLUDE POST & PACKING

HUNTER VALLEY VZ USERS' GROUP - PO BOX 161 JESMOND 2299
NEW SOUTH WALES AUSTRALIA

VZ USER GROUPS & PUBLICATIONS --

VZ DOWN UNDER - VZ MAGAZINE - 6 ISSUES - $18.00 PER ANUM
HARRY HUGGINS 12 THOMAS SREET MITCHAM VICTORIA 3132

WAVZ - WESTERN AUSTRALIA VZ USER GROUP
GRAEME BYWATER P O BOX 388 MORLEY W A 6062

BRISBANE VZ USERS WORKSHOP - C/O 63 TINGALPA ST. WYNUM WEST 4178
SOFTWARE FOR SALE - DISK MENU

SAPPHIRE PRODUCTIONS - VZ DISK MAGAZINE - $20.00 PER ANUM
CONTACT JASON OAKLEY PO BOX 600 TAREE NSW 2430

NOTE: WHEN WRITING TO ANY ABOVE OR H.V.VZ. USERS' GROUP FOR INFORMATION PLEASE ENCLOSE A S.S.A.E. OR NZ 2 INT. REPLY COUPONS.